



National Aeronautics and
Space Administration
Lyndon B. Johnson Space Center
Houston, Texas



Record flight

STS-78 crew members share photos of their record-setting mission. Photos on Page 3.



Native narration

The "Allpanchis" entertain employees during lunch in the Bldg. 3 cafeteria. Photo on Page 4.

Space News Roundup

Vol. 35

July 19, 1996

No. 28

Test chamber quartet ready to stay longer

Four JSC volunteers emerged from their temporary home last Friday with plans to spend time outdoors but said they would have been happy to stay in their recycled environment longer.

"I'm going to go out and hug a tree, look at the sun and probably find my fly fishing rod and go fishing," said Doug Ming, test crew lead for the Advance Life Support System.

Ming along with John Lewis, lead engineer, Pat O'Rear, lead electrical engineer and Katy Hurlbert an aerospace engineer and thermal systems expert, have been living inside the three-story, 20-foot diameter chamber 24 hours a day since June 12. The four JSC volunteers spent 30 days sealed in a converted vacuum chamber in Bldg. 7, continually recycling a week's worth of air and water to test technology that may one day become a cornerstone of human survival beyond Earth orbit.

"It was really very easy, surprisingly easy," Hurlbert said. "I'd do it again."

Ming said it never bothered the volunteers that their drinking water was recycled from several sources, including urine. "I know the chemical makeup of the water, and I know it was purer than anything we get in Houston. The air composition was definitely a lot better." Please see **TWO**, Page 4



JSC Photo by Robert Markowitz

Four JSC volunteers emerge from their temporary home last Friday after spending 30 days in a sealed test chamber in Bldg. 7. The team entered the chamber June 12 and continually recycled a week's worth of air and water to test technology that may one day become a cornerstone of human survival beyond Earth orbit.

Booster change under way, new launch date set

By James Hartsfield

Atlantis remains in Kennedy Space Center's Vehicle Assembly Bldg. following a decision July 12 by managers to destack the STS-79 solid rocket boosters and remate *Atlantis* to the STS-80 boosters.

The change in boosters will mean an approximate six-week delay in *Atlantis*' launch on STS-79, the fourth shuttle-Mir docking mission, from July 31 to around Sept. 12. STS-79 will bring Astronaut Shannon Lucid home from the Russian Mir Space Station and drop off Astronaut John Blaha for a four-month stay.

The solid rocket booster swap came as the result of an investigation of charring and sooting found during post-flight inspections of interior J-joints in the STS-78 solid rockets. The J-joints are where rubber insulation on the interior of the solid rocket casings meets at each of the three field joints. Inspections of the STS-78 boosters found the rubber charred in places and soot reaching near the actual field joint and capture-feature O-ring, the first of three O-rings in each joint.

Although the J-joint was not

designed to seal against pressure, it has always done so. On STS-78 and on the STS-79 boosters, a new adhesive was used during assembly of the J-joints and is thought to have been the cause of the problem. The new adhesive had been used because the original adhesive was no longer manufactured. As a result of the investigation, shuttle managers decided to destack and use the STS-80 boosters, now being stacked with remaining supplies of the original adhesive. Enough supplies of the original adhesive are still available at KSC to last two years.

Stacking of the STS-80 boosters has been accelerated, and work this week included the stacking of the left-hand booster's center and forward segments. Stacking of the left booster is expected to be completed by today, and work on the right booster will begin next week.

Meanwhile, *Columbia* is being readied for STS-80, the third flight of the Wake Shield Facility. The impact of the solid rocket booster swap on *Columbia*'s launch date is continuing to be assessed. Work this week on *Columbia* included removal of the Spacelab module and main engines.



Lucid's extended stay to break female flight record

By Natasha Calder

Cosmonaut Researcher Shannon Lucid broke the U.S. record for the longest space flight Monday and also could break the longest flight by a woman now that her stay on the Russian outpost is extended.

But Lucid said she sees her record as only one in what she hopes will become a long series of records to be set by American's in space.

"I feel very honored and very proud that I have this opportunity to be here on board the Russian Space Station Mir representing America," Lucid said Monday in a news conference. "I just hope it is not a record that holds very long because I hope that in the next few years, quite a few Americans will have the opportunity to spend a long time in space and that NASA, that America, will be

able to gain a lot of experience with long-duration space flight."

In putting this record-setting experience in perspective, Lucid spoke about what she has learned aboard the space station that she feels is significant.

"I think the most important thing you can learn from an experience like this is that the crew has to be compatible and get along and work together," she said. "And the other thing that I think is absolutely of vital importance, is that you have very strong family support. My family has supported me all the way and still supports me and that has been vital to my well-being and having a good time here on Mir."

That support will now have to continue from Lucid's family for an additional six weeks. The decision to delay the launch of STS-79 and therefore extend Lucid's stay aboard Mir was made last Friday after inspections of the STS-78 solid rocket boosters found the rubber insulation charred in places and soot reaching near the field joint and the capture-feature O-ring.

Although investigations concluded that the risk of a field joint failure on the STS-79 boosters was improbable, mission managers decided to replace boosters, delaying the rendezvous until mid-September.

Lucid is taking the extended stay and the new challenges the extension will bring in stride.



Galileo spacecraft makes discoveries at Ganymede

NASA's Galileo spacecraft has returned stunning close-ups of Jupiter's moon Ganymede, revealing that the face of the huge satellite has been extensively bombed by comets and asteroids and is dramatically wrinkled and torn by the same forces that make mountains and move continents on Earth.

"These images have exceeded our wildest expectations," said Michael Belton, of the National Optical Astronomy Observatories.

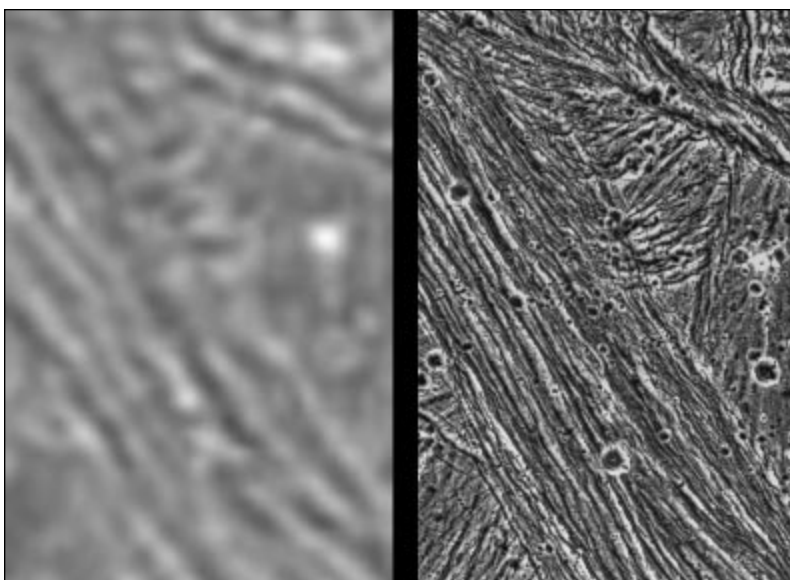
At the same time, scientists studying data from space physics instruments on the spacecraft have made the discovery that Ganymede possesses its own magnetosphere—a bubble-shaped region of charged particles that surrounds many of the planets but has never been found to exist around a moon. Possible

sources of a magnetic field include a molten iron core or even a thin layer of conducting salty water underneath its icy crust.

"What we've found is a magnetosphere within a magnetosphere," said Galileo Project Scientist Torrence Johnson at NASA's Jet Propulsion Laboratory. "While we expected some degree of interaction between Ganymede and Jupiter's magnetic environment, the size and the effect at Ganymede was completely unexpected."

The crisp new images and magnetospheric findings were revealed in data returned by Galileo in the days since its first flyby on June 27, when the spacecraft came within just 519 miles of the big moon.

The discoveries are based on just Please see **GALILEO**, Page 4



NASA Photo

NASA's Galileo spacecraft is returning images that show a dramatic improvement in the resolution of pictures compared to previous images of the Jupiter system taken by the Voyager 2 spacecraft when it flew by in 1979. The image is clearer due to the close proximity of Galileo to Ganymede—only 519 miles.

Four round out sixth Mir docking

By Eileen Hawley

Four crew members have been named to join Commander Charlie Precourt on board *Atlantis* for the sixth scheduled docking mission between the space shuttle and the Russian Mir Space Station.

Joining Precourt on the flight deck will be Pilot Eileen Collins, Mission Specialist Carlos Noriega and Edward Lu, the first mission specialists from the 1995 astronaut class to be assigned to a shuttle flight. Rounding out the crew is European Space Agency astronaut Jean-Francois Clervoy.

Precourt was named commander of the mission last February. *Atlantis* also will carry Mission Specialist Mike Foale to Mir to begin a planned four-month stay as part of NASA's Phase 1 Program. Foale will replace

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